

REMARKS

Applicants appreciate the Examiner's allowance of Claims 28-39.

Applicants are amending independent Claim 1 to better claim the present invention.

Applicants will now address the Examiner's remaining rejections in the order in which they appear in the Office Action.

Claim Rejections - 35 USC §103

Claims 1-4, 6-11, 13-16, 18-27, 40, 42-47 and 49-52

In the Office Action, the Examiner rejects Claims 1-4, 6-11, 13-16, 18-27, 40, 42-47 and 49-52 under 35 USC §103 as being unpatentable over Oikawa et al. (US 4,770,948) in view of Prall et al. (US 5,341,016). This rejection is respectfully traversed.

In particular, independent Claim 1 is directed to a semiconductor device comprising a wiring which comprises tungsten or tungsten compound formed over a substrate, the wiring including a gate electrode and including argon, and an amount of sodium contained within the wiring is equal to or less than 0.3 ppm. Applicants respectfully submit that the features of this claim is not disclosed or suggested by the cited references.

The Examiner, however, contends in the Office Action, that Oikawa discloses a semiconductor device comprising wirings including a gate electrode (5) formed over a substrate (1), the wirings comprising a tungsten film, and wherein an amount of sodium within the tungsten film is equal to or less than 0.3 ppm (emphasis added). Applicants respectfully disagree.

The claimed invention clearly recites an amount of sodium within the wiring. In contrast, Oikawa discloses a concentration of sodium in a target, not within the wiring. See e.g. col. 6, lns. 13-31 and col. 8, lns. 1-16 in Oikawa. There is no disclosure or suggestion in Oikawa of the sodium

concentration of the metal film of the wiring. The sodium concentration of the target is not the same as the sodium concentration in the metal film of the wiring. In fact, the Examiner agrees with Applicants.

As a further example to emphasize this difference, the specification of the present application recites a target purity (e.g. page 8, lns. 22-24) and a sodium concentration for a wiring (e.g. page 9, lns. 10-12 and page 10, lns. 6-11). Each of these is discussed separately, in a different place and manner in the specification since they are not the same. Hence, one skilled in the art reading the specification of the present application would understand that these are not the same and that the teaching regarding the target concentration is not the same as the teaching regarding the concentration of the wiring.

In contrast, there has been no showing by the Examiner as to where there is a teaching in Oikawa of the concentration of the wiring or how one skilled in the art would arrive at the concentration of the metal film of the wiring from the concentration of the target. The Examiner, however, contends that the sodium concentration of the wiring should be less than that of the target and meets the recited limitations. The Examiner cites no support for this statement or support for how one skilled in the art would get from a target concentration to a wiring concentration.

MPEP §2142 states that in order to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. The Examiner has cited no such suggestion or motivation (or support) to modify the teaching in Oikawa of the target concentration to arrive at a teaching of the concentration of the wiring. MPEP §2142 further states that the prior art reference (or references when combined) must teach or suggest all the claim limitations. In this case, there is no teaching or suggestion in Oikawa or Oikawa combined with Prall of the claimed

limitation of the concentration of the wiring. Hence, the Examiner has failed to establish a prima facie case of obviousness and as explained above, needs to provide support for his conclusion.

Further, Oikawa discloses a sodium concentration only in a molybdenum target. There is no disclosure of an impurity concentration in other metals, such as tungsten.

Therefore, for at least the above-stated reasons, the cited references do not disclose or suggest the claimed invention of independent Claim 1, the Examiner has failed to establish a prima facie case of obviousness, and Claim 1 and those claims dependent thereon are patentable over the cited references. Accordingly, it is respectfully requested that this rejection be withdrawn.

While Applicants traverse this rejection, in order to advance the prosecution of this application, Applicants are canceling Claims 4, 6-9, 16-27 and 40-52, without prejudice or disclaimer, rendering the rejection of these claims moot.

Claims 5, 12, 17, 41 and 48

The Examiner also rejects Claims 5, 12, 17, 41 and 48 under 35 USC §103 as being unpatentable over Oikawa in view of Prall and further in view of Ikeda et al. (JP 8-153722). This rejection is also respectfully traversed.

Each of these claims is a dependent claim. Therefore, for at least the reasons discussed above for the independent claims, each of these dependent claims is also patentable over the cited references. Accordingly, it is respectfully requested that this rejection also be withdrawn.

New Claims

Applicants are adding new Claims 64-120. These claims are allowable over the cited references for at least the above-stated reasons.

In particular, new independent Claim 64 recites a glass substrate and a base insulating film (in addition to the features of amended independent Claim 1). These features are supported by, for example, page 15, lns. 4-13 of the present application. In addition to the reasons discussed above for the allowability of claim 1 and the similar features in Claim 64, the other features of Claim 64 distinguish over Oikawa and Prall. In particular, a glass substrate is one of the causes of the sodium contamination. The claimed base insulating film, however, comprising silicon nitride or silicon oxynitride is effective for blocking sodium. These features do not appear to be disclosed or suggested by the cited references. Further, there appears to be no appreciation in Oikawa of this type of possible contamination and prevention thereof. Further, in the Examiner's rejection, he is only concerned with the purity of the target material and does not take into consideration other contamination sources. Hence, the cited references do not disclose or suggest independent Claim 64.

For similar reasons, new independent Claims 83 and 93 are also patentable.

Further, new independent Claims 74, 83 and 103 recite an internal stress of the wiring. This feature is supported by, for example, page 8, ln. 25 - page 9, ln. 5 of the present application. Applicants respectfully submit that neither Oikawa nor Prall disclose or suggest this feature.

Accordingly, it is respectfully requested that these new claims be entered and allowed at this time. If any fee should be due for these claims, please charge our deposit account 50/1039.

Conclusion

It is respectfully submitted that the present application is in a condition for allowance and should be allowed.

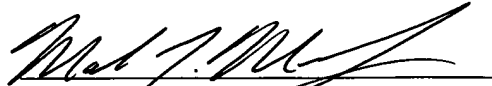
If any further fee should be due for this amendment, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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